

## ABSTRACT

A method and apparatus for detecting the occurrence of surge or incipient surge in a centrifugal compressor is supplied. The centrifugal compressor has an inlet passage, an inlet passage wall and an impeller. When flowing a fluid through the centrifugal compressor thereby establishing a fluid flow in the inlet passage, the fluid flow is measured in the inlet passage proximate the inlet passage wall and proximate the impeller. The measurements may include detecting a reverse in the fluid flow direction, measuring a tangential component to the fluid flow, measuring a substantial decrease in the axial fluid flow, and/or measuring the fluid temperature. Fluid flow in the compressor can then be modified or controlled to prevent surge.